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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/921,868	08/03/2001	Vikas Agarwal	JP920010088US1	7137

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EXAMINER
CLARK, ISAAC R

ART UNIT	PAPER NUMBER
2154	

DATE MAILED: 01/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

		Application No.	Applicant(s)
Office Action Summary		09/921,868	AGARWAL ET AL.
		Examiner	Art Unit	
		Isaac R Clark	2154	

-- *The MAILING DATE of this communication appears on the cover she t with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>03 August 2001</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-20</u> is/are pending in the application.

    4a) Of the above claim(s) <u>10-12, 17 and 18</u> is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-9, 13-16, 19, and 20</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>01/18/2002</u> is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>08/18/2003</u>.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____ .

DETAILED ACTION

1.   Claims 1-20 are presented for examination.

Election/Restrictions

2.   Restriction to one of the following inventions is required under 35 U.S.C. 121:

I.   Claims 1-9, 13-16, 19 and 20 drawn to a method, apparatus, and product

for providing access to applications on multiple networked machines,

classified in class 709, subclass 226.

II.   Claims 10-12, 17, and 18, drawn to a method, apparatus, and product for

computing user charges for accessing applications on networked

machines, classified in class 705, subclass 400.

3.   Inventions I and II are related as subcombinations disclosed as usable together

in a single combination. The subcombinations are distinct from each other if they are

shown to be separately usable. In the instant case, invention II has separate utility such

as tracking service charges associated with user access to application resources on

remote servers. See MPEP § 806.05(d).

4.   Because these inventions are distinct for the reasons given above and have

acquired a separate status in the art as shown by their different classification, restriction

for examination purposes as indicated is proper.

5.   During a telephone conversation with Mr. Frederick Gibb (Registration #37,629)

on December 14, 2004 a provisional election was made without traverse to prosecute

the invention of I, claims 1-9, 13-16, and 19-26. Affirmation of this election must be

made by applicant in replying to this Office action. Claims 10-12, 17, and 18 are

withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn
to a non-elected invention.

Priority

6.   The effective filing date for the subject matter in the pending claims in this
application is on 08/03/2001.

Drawings

7.   The Office acknowledges the drawings received on 01/18/2002.

8.   The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4)
because reference characters "324" and "326" have both been used to designate the
"Level 2b Aggregator" (See Fig. 3).   It is noted that the Specification refers to item 324
as the "Level 2a Aggregator."

9.   The drawings are objected to because the text of Block 420 in Fig. 4 does not
match the description in the specification. The specification (Paragraph 0169, third
paragraph on page 24) indicates that Block 440 is entered from Block 420 if CL is less
than γCA while the text of Block 420 indicates that Block 440 is entered when "CL >
γCA".

10.   Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in
reply to the Office action to avoid abandonment of the application. Any amended
replacement drawing sheet should include all of the figures appearing on the immediate
prior version of the sheet, even if only one figure is being amended. The figure or figure
number of an amended drawing should not be labeled as "amended." If a drawing figure
is to be canceled, the appropriate figure must be removed from the replacement sheet,

and where necessary, the remaining figures must be renumbered and appropriate

changes made to the brief description of the several views of the drawings for

consistency. Additional replacement sheets may be necessary to show the renumbering

of the remaining figures. The replacement sheet(s) should be labeled "Replacement

Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of

the drawing figures. If the changes are not accepted by the examiner, the applicant will

be notified and informed of any required corrective action in the next Office action. The

objection to the drawings will not be held in abeyance.

Specification

11.   The abstract of the disclosure is objected to because the length (226 words)

exceeds 150 words. Correction is required. See MPEP § 608.01(b).

Claim Objections

12.   Claims 8 and 19 is objected to because of the following informalities:

a.   Claim 8 contains the phrase "charges in the corresponding number of

instances". The word "charges" appears to be a typographical error and

replacing the intended word "change".

b.   Claim 19 is not expressed as a sentence because there is no verb

connecting the preamble with the enumerated means. It is recommended that

"the system" in line 3 of the claim be replaced with "the system comprising".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

13.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

14.   Claim 1-3, 5, 6, 9, 13, 15, 16, 19, and 20 are rejected under 35 U.S.C. 103(a) as

being unpatentable over Goyal (US 6,711,607) in view of Sharma et al. (US 6,182,109)

hereinafter Sharma.

15.   As per claim 1, Goyal teaches a method of providing access for a plurality of

users to an application comprising a plurality of resource class components collectively

executing on multiple networked machines (col. 2, lines 31-35), the method comprising

steps of: (i) receiving an incoming flow of requests from users to use an application (col.

2, lines 42-49); (ii) providing, for each of the users, respective sets of one or more

instances of each resource class component for the application on one or more

machines, to service the incoming requests from respective users to use the application

(col. 6, lines 45-50); (iii) directing each of the incoming requests to a particular instance

of an appropriate resource class component (col. 6, lines 32-35); (iv) monitoring, for

each of the users, the number of requests serviced by the instances of the resource

class components of the application (col. 6, lines 37-40);

16.   Goyal fails to explicitly teach increasing or decreasing the number of instances of

one or more resource class components in response to the monitored number of

requests for each resource class component.

17.   Sharma teaches increasing or decreasing the number of instances of one or more resource class components in response to the monitored number of requests for each resource class component (col. 24, lines 38-46; col. 26, lines 10-12).

18.   It would have been obvious to one of ordinary skill in this art at the time the invention was made to combine the teaching of Goyal and Sharma because they both deal with providing access to a plurality of server resources by a plurality of users. Furthermore, the teaching of Sharma to modify the resource allocating system of Goyal to increase or decrease the number of resource components in response to the monitored number of requests would increase efficiency by minimizing the management overhead during times of low load while increasing the capacity to maintain quality of service guarantees during period of higher load (Sharma, col. 26, lines 1-4 and 13-15).

19.   As per claim 2, Goyal teaches the method as claimed in claim 1, further comprising the step of: directing each of the incoming requests from respective users to a particular instance of an appropriate resource class component from a respective set of one or more instances of each resource class component, said particular instance being identified as the least loaded of the instances of the appropriate resource class component from that respective set (col. 7, lines 32-35).

20.   As per claim 3, Goyal teaches the method as claimed in claim 1, including providing instances of each resource class component (col. 6, lines 45-50).

21.   Goyal fails to explicitly teach that the step of providing instances of each resource class component further comprises the steps of: initiating one or more instance of one or more resource class on a plurality of machines to service incoming

requests to use the application; and terminating one or more instances of each resource class on a plurality of machines to service incoming requests to use the application.

22.   Sharma teaches providing resource components to service incoming requests by initiating one or more instance of one or more resource class on a plurality of machines to service incoming requests to use the application; and terminating one or more instances of each resource class on a plurality of machines to service incoming requests to use the application (col. 23, lines 55-65; initiating a resource component instance. col. 25, lines 45-55: terminating one or more instances).

23.   It would have been obvious to one of ordinary skill in this art at the time the invention was made to combine the teaching of Goyal and Sharma because they both deal with providing access to a plurality of server resources by a plurality of users. Furthermore, the teaching of Sharma to modify the resource allocating system of Goyal to initiate and terminate resource components to service incoming requests to use an application would increase efficiency by minimizing the management overhead during times of low load while increasing the capacity to maintain quality of service guarantees during period of higher load (Sharma, col. 26, lines 1-4 and 13-15).

24.   As per claim 15, claim 15 describes the apparatus for carrying out the method described in claim 1.   Claim 15 is rejected for the same reason as claim 1.

25.   As per claim 16, claim 16 describes computer medium containing instructions for carrying out the method described in claim 1.   Goyal teaches that the method of claim 1 can be carried out on a computer system (col. 2, lines 34-36). Claim 16 is rejected for the same reason as claim 1.

26.   As per claim 5, Goyal teaches the method as claimed in claim 1, further

comprising the step of: maintaining a record of service obligations to respective users

(col. 5, lines 12-15).

27.   As per claim 6, Goyal teaches the method as claimed in claim 5, further including

assigning users to resources in response to requests for components wherein the

service obligations to respective users are at least met (col. 7, lines 26-35).

28.   Goyal fails to explicitly teach increasing or decreasing, for each of the users, the

number of instances of each resource class component in response to the monitored

number of requests for each resource class component, wherein the service obligations

to respective users are at least met.

29.   Sharma teaches increasing or decreasing instances of resource classes in order

to maintain system performance (Fig. 8D, steps 655, 665 and 671; col. 25, lines 45-52;

reducing instances of resources; col. 25, lines 27-30).

30.   It would have been obvious to one of ordinary skill in this art at the time the

invention was made to combine the teaching of Goyal and Sharma because they both

deal with providing access to a plurality of server resources by a plurality of users.

Furthermore, the teaching of Sharma to modify the resource allocating system of Goyal

to increase or decrease the number of instances of each resource class component in

response to requests for resource components would increase system efficiency by

minimizing the management overhead during times of low load while increasing the

capacity to maintain quality of service guarantees during period of higher load (Sharma,

col. 26, lines 1-4 and 13-15).

6. The method as claimed in claim 5, further comprising the step of: increasing or decreasing, for each of the users, the number of instances of each resource class component in response to the monitored number of requests for each resource class component, wherein the service obligations to respective users are at least met.

31.   As per claim 9, Goyal teaches the method as claimed in claim 1, wherein one or more of the users are organizations, and the requests are generated by individuals associated with the respective organization (col. 5, lines 12-15; col. 2, lines 58-61).

32.   As per claim 13, Goyal teaches a method of providing access for a plurality of users to an application comprising a plurality of resource class components collectively executing on multiple networked machines (col. 2, lines 31-35), the method comprising steps of: receiving an incoming flow of requests from users to use an application (col. 2, lines 42-49); providing, for each of the users, respective sets of one or more instances of each resource class component for the application on one or more machines, to service the incoming requests from the users to use the application (col. 6, lines 45-50);

33.   Goyal teaches assigning resources to users to meet service obligations to the user (col. 5. lines 15-22).

34.   Goyal fails to explicitly teach monitoring, for each of the users, the resources currently available and resources currently consumed by the requests serviced by instances of the resource class components of the application; and maintaining (i) a record of resources currently available to respective users; and (ii) a record of resources currently consumed by respective users; both records of said resources being

maintained in respect of each of the one or more instances of each resource class components.

35.   Sharma teaches monitoring the resources currently available and resources currently consumed by the requests serviced by instances of the resource class components of the application; and maintaining (i) a record of resources currently available to users; and (ii) a record of resources currently consumed by respective users; both records of said resources being maintained in respect of each of the one or more instances of each resource class components (col. 23, lines 26-47).

36.   It would have been obvious to one of ordinary skill in this art at the time the invention was made to combine the teaching of Goyal and Sharma to maintain records of resource components of an application currently used by users and currently available to respective users because they both deal with providing access to a plurality of server resources by a plurality of users. Furthermore, the teaching of Sharma to modify the resource allocation scheme to track the resources instances used an available to be used by respective users would increase the efficiency and responsiveness of the system to user requests by allowing the system to delete unused resources reducing management overhead and to increase resources when the used resources are near the limit of those available (Sharma col. 26, lines 13-24).

37.   As per claim 19 (as construed), claim 19 describes the apparatus for carrying out the method described in claim 13. Claim 19 is rejected for the same reason as claim 13.

38.   As per claim 20, claim 20 describes a computer medium containing instructions
for carrying out the method described in claim 13.   Goyal teaches that the method of
claim 13 can be carried out on a computer system (col. 2, lines 34-36).   Claim 20 is
rejected for the same reason as claim 13.

39.   Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goyal
and Sharma as applied to claim 1 above and further in view of Official Notice.

40.   As per claim 4, Goyal teaches t he method as claimed in claim 1, wherein
requests from users to use the application are stored in a queue for execution by a
particular instance of the appropriate resource class using any conventional uni-
processor scheduling algorithm.

41.   Goyal fails to explicitly teach that the requests are scheduled on a first-in-first-out
basis.   However the examiner takes Official Notice that first-in-first-out task scheduling
schemes were well known in the art at the time the applicant's invention was made. It
would have been obvious to one of ordinary skill in this art at the time the invention was
made to use a first-in-first out scheme to schedule execution by a particular instance of
a resource in order to provide a fair scheduling scheme that tends to minimize the
waiting time for processing of requests.

42.   Claims 7, 8, and 14 is rejected under 35 U.S.C. 103(a) as being unpatentable
over Goyal and Sharma as applied respectively to claims 1 and 13 above and further in
view of Al-Hilali et al. (US 6,086,618) hereinafter Al-Hilali.

43.   As per claim 7, Goyal teaches the method as claimed in claim 1, further

comprising the step of: maintaining a record of the current rate of requests received

from respective users, based on the monitored number of serviced requests.

44.   Al-Hilali teaches that the resource usage of a server application depends on the

transaction request rate (col. 17, lines 25-40; col. 18, lines 1-4).

45.   It would have been obvious to one of ordinary skill in this art at the time the

invention was made to combine the teaching of Goyal and Al-Hilali to maintain a record

of the requests received from respective users based on the monitored number of

requests because they both deal with providing resources to service client requests to

server applications. Furthermore, the teaching of Al-Hilali to modify the resource

allocation system of Goyal to calculate the current rate of requests would allow

predicting the resource required to service the requests thus allowing more efficient

assignment of resource (Al-Hilali, col. 18, lines 5-10).

46.   As per claim 8, Goyal fails to teach the method as claimed in claim 7, wherein

said step of increasing or decreasing the number of instances of said one or more

resource classes is (i) at least partly based upon said recorded current rate of requests

received from respective users, and (ii) at least partly based on predetermined

information that correlates changes in request rates with changes in the corresponding

number of instances of said one or more resource classes required to service said

request rates.

47.   Al-Hilali teaches determining profiles of applications relating the resources

required to service a request at various request rates (col. 15, lines 23-32, resource

usage measured with respect to load measured as a transaction rate). Al-Hilali further

teaches using the profiles to predict the required resources (col. 4, 52-55).

48.   It would have been obvious to one of ordinary skill in this art at the time the

invention was made to combine the teaching of Goyal and Al-Hilali to use determine the

number of instances of resources using the rate of requests and predetermined

information correlating changes in request rates with changes in the number of

instances required to service said request rates. Furthermore, the teaching of Al-Hilali

to modify the resource allocation system of Goyal to calculate the current rate of

requests would allow predicting the resource required to service the requests thus

allowing more efficient assignment of resource (Al-Hilali, col. 18, lines 5-10).

49.   As per claim 14, Goyal fails to teach the method as claimed in claim 13, further

comprising the step of: adjusting the respective numbers of said one or more instances

of each resource class component; wherein said instances of each resource class

component are adjusted for each user based (i) at least partly on said records of

resources currently available and currently consumed by respective users, and (ii) at

least partly on predetermined information that estimates the number of each resource

class components required to service requests for said instances of the resource class

components.

50.   Sharma teaches adjusting the respective numbers of said one or more instances

of each resource class component; wherein said instances of each resource class

component are adjusted for each user based at least partly on said records of resources

currently available and currently consumed by respective users (col. 24, lines 3-14;

resources created based on those currently available and those currently consumed);

51.   It would have been obvious to one of ordinary skill in this art at the time the

invention was made to combine the teaching of Goyal and Sharma because they both

deal with providing access to a plurality of server resources by a plurality of users.

Furthermore, the teaching of Sharma to modify the resource allocating system of Goyal

to increase or decrease the number of resource components based on those

components currently available and those currently consumed would increase system

efficiency by minimizing the management overhead during times of low load while

increasing the capacity to maintain quality of service guarantees during period of higher

load (Sharma, col. 26, lines 1-4 and 13-15).

52.   Al-Hilali teaches determining a profile of an application that relates the resources

required by an application to the number and rate of requests for the application (col. 8,

lines 45-54: relation of application activity to use of multiple resources, col. 10; resource

cost equations developed from measurements).

53.   It would have been obvious to one of ordinary skill in this art at the time the

invention was made to combine the teaching of Goyal and Al-Hilali to base increases of

the number of resource instances partly on predetermined information that estimates

the number of each resource class components required to service requests for said

instances of the resource class components because they both providing resources to

service client requests to server applications. Furthermore, the teaching of Al-Hilali to

predict resource needs based on predetermined information estimating the resources

required to service requests would allow more accurately providing resources to service

user requests improving system efficiency and responsiveness (See Al-Hilali, col. 1-16).

Conclusion

54.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure. The following patents and publications are cited to further show

the state of the art with respect to "Managing server resources for hosted applications".

     i.   US 6,088,732   Smith et al.   Allocating resources

based on service level

     ii.   US 6,631,425   Helland et al.   Activating and deactivating

resources allocated for a client

     iii.   US 6,763,519   McColl et al.   Assigning resource

instances to task based on signature of resources needed by the task

     iv.   US 6,327,622   Jindal et al.   Load balancing application

instances among multiple servers

     v.   US 6,578,068   Bowman-Amuah   Optimizing resource

allocation in a client-server environment

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Isaac R Clark whose telephone number is (571)272-

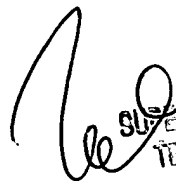3961. The examiner can normally be reached on Monday-Friday 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, John A Follansbee can be reached on (571)272-3964. The fax phone

number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

IRC

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